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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,114	03/17/2004	Che-Hsiung Hsu	UC0401USNA	5295

23906 7590 12/27/2005

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EXAMINER	
COSTALES, SHRUTI S	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/803,114	HSU ET AL.	
	Examiner	Art Unit	
	Shruti S. Costales	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3 and 6-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3 and 6-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/14/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding objections and rejections except for those described below are overcome by applicant's amendment filed October 18, 2005.

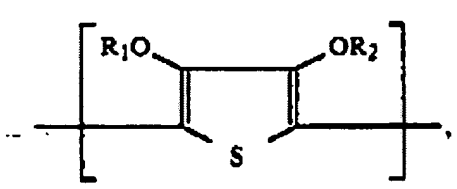
2. Upon consideration applicant's arguments, the rejections set forth in the action mailed October 18, 2005 have been reconsidered and the following new grounds of rejection have been set forth below in paragraphs 4-7. Accordingly, the following action is **NON-FINAL.**

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.

4. Claims 3, 6-11, 14-17, 19, 22-25, 27, and 28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jonas in view of Han et al. (U.S. Patent Number 5,185,100) and in view of the evidence set forth by Hsu (U.S. Pre-Grant Publication Number 2005/0222333).

Jonas discloses polythiophene dispersions, their production and, use of the salts for the antistatic treatment of plastic moldings and as organic conductors in electronic equipment and capacitors (Col. 1, lines 7-14). It is also disclosed that the polythiophene is represented by formula (I):



(I)

wherein R_1 and R_2 independently represent hydrogen or a C_{1-4} alkyl group or, together, represent an optionally substituted C_{1-4} alkylene group, preferably an optionally alkyl-substituted methylene group, an optionally C_{1-2} -alkyl- or phenyl-substituted 1,2-ethylene group, a 1,3-propylene group or a 1,2-cyclohexylene group (Col. 2, lines 12-44). Further, the preferred representatives of the optionally substituted C_{1-4} alkylene groups, which R_1 and R_2 may form together, are the 1,2-alkylene groups which are derived from the 1,2-dibromoalkanes obtainable by bromination of a-olefins, such as ethane, prop-1-ene, hex-1-ene, oct-1-ene, dec-1-ene, dodec-1-ene and styrene, and other representatives are the 1,2-cyclohexylene, 2,3-butylene, 2,3-dimethyl-2,3-butylene and 2,3-pentylene groups (Col. 2, lines 12-44). The dispersion contains polyanions such as polymeric carboxylic acids, including polyacrylic acids, polymethacrylic acids or polymaleic acids, and polymeric sulfonic acids, such as polystyrene sulfonic acids and polyvinyl sulfonic acids, wherein these polycarboxylic and polysulfonic acids may also be copolymers of vinyl carboxylic and vinyl sulfonic acids with other polymerizable monomers, such as acrylates and styrene (Col. 2, lines 45-66). Although Jonas is silent with respect to the colloid-forming property of the disclosed polymeric acids, attention is drawn to page 3, paragraph [0051] of Hsu which provides evidence that the polymeric sulfonic acids of Jonas are colloid-forming. Solvents are also disclosed including lower alcohols like methanol, ethanol, or isopropanol as well as mixtures of water with said

lower alcohols with other water-miscible organic solvents like acetone (Col. 2, lines 1-4). The solids content of the dispersion is in the range of 0.5 to 55% by weight, inherently including 45 to 99.5% by weight of solvent (Col. 4, lines 32-37). Jonas also discloses that the polythiophene composition has a pH of 8 (Col. 5, lines 65-66).

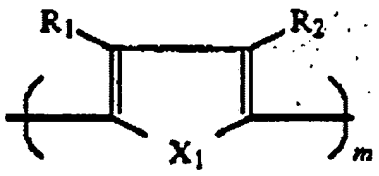
With particular reference to "at least 60% by weight of at least one organic liquid", attention is drawn to Col. 3, line 22 of Jonas which discloses that the disclosed composition is made in an organic solvent. Although the amount of solvent is not disclosed it would have been obvious to one of ordinary skill in the art that the cited portions of Jonas encompass 100 wt% organic solvent, thereby meeting the claimed invention. Should applicant respond by pointing to the examples of Jonas which use water and/or a mixture of organic solvent and water, the Examiner would maintain that one cannot ignore the broader, instructive disclosure of a reference at the expense of reliance only on the specific examples, where the broader disclosure teaches how to modify the exemplary compositions to produce certain desired results. *In re Courtright*, 153 USPQ 735, 739 (CCPA 1967).

Jonas also discloses that for polymerization, the thiophenes, polyacid and oxidizing agent are dissolved in an organic solvent or, preferably, in water, inherently forming an aqueous dispersion in water that may also include the organic solvent, and the resulting solution is stirred at the polymerization temperature envisaged until the polymerization reaction is complete, wherein the compositions obtained after polymerization may be directly used for the antistatic treatment of plastic moldings after removal of the solvent, for example water, the antistatic layer from the polythiophene is

directly obtained, remaining antistatic in the presence of atmospheric moisture (Col. 3, lines 19-47). Oxidizing agents used during polymerization include any oxidizing agents suitable for the polymerization of pyrrole, such as iron(III) salts – $FeCl_3$, etc. (Col. 3, lines 48-68 and Col. 4, lines 1-21). Further, it is disclosed by Jonas that after drying or in other words the removal of water, which would inherently include drying the polymerized dispersion to a partially dried solid state, the polythiophene dispersions including the organic solvent are applied to plastic moldings in layers to be antistatically treated (Col. 4, lines 50-55). Jonas also discloses a photosensitive multilayer structure at Col. 8, line 16 inherently including photosensors, photoswitches, phototransistors, photoconductive cell, photoresistors, phototubes, photovoltaic devices, and photo diodes, in addition to organic conductors in electronic equipment and capacitors (Col. 1, lines 7-14).

The difference between Jonas and the presently claimed invention is a polypyrrole having a specified structure.

Han, which is drawn to electrically conductive polymers (Col. 1, lines 8-16) including blend of polythiophene and polypyrrole (Col. 3, line 42), discloses polypyrroles represented in formula (I) (See Col. 3, lines 25-67; Col. 4, lines 1-67; and Col. 5, lines 1-30):



(I)

wherein, m is at least 20, R_1 and R_2 are the same or different at each occurrence and are hydrogen or isotopes thereof, hydroxyl, alkyl, alkenyl , aryl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, alkylthio, aryloxy, alkylthioalkyl, alkynyl, alkylaryl, arylalkyl, amido, alkylsulfinyl, alkoxyalkyl, alkylsulfonyl, aryl, arylamino, diarylamino, alkylamino, dialkylamino, phosphoric acid, alkylarylamino, arylthio, heteroaryl, arylsulfinyl, alkoxycarbonyl, arylsulfonyl, carboxylic acid, halogen, nitro, cyano, sulfonic acid, or alkyl or phenyl substituted with one or more of sulfonic acid (or derivatives thereof), phosphoric acid (or derivatives thereof), carboxylic acid (or derivatives thereof), halo, amino, nitro, hydroxyl, cyano or epoxy moieties (Col. 5, lines 31-51; see also Col. 5, lines 52-68, Col. 6, lines 1-68, Col. 7, lines 1-68, and Col. 8, lines 1-66). X_1 is NR_{17}, wherein R_{17} includes hydrogen, methyl, ethyl, propyl, hexyl, octyl, nonyl, phenyl, benzyl, vinyl, allyl, dodecylphenyl, phenethyl, phenylpropyl, 2,4-dimethylphenyl, 4-methylphenyl and the like (Col. 6, lines 1-64; see also Col. 5, lines 52-68, Col. 6, lines 1-68, Col. 7, lines 1-68, and Col. 8, lines 1-66). Han also discloses that R_1 and R_2 together may form an alkylene, alkenylene, or alkynylene group completing a 4, 5, 6, 7, 8, 9 or 10 membered aromatic or alicyclic carbon ring, which ring may optionally include one or more degrees of unsaturation or one or more heteroatoms of oxygen, nitrogen, or (Col. 7, lines 43-68 and Col. 8, lines 1-2). It would have been obvious to one of ordinary skill in the art to use the polypyrrole of Han in the dispersion of Jonas because the electrically conductive polymer may be used to form electrically conductive articles such as antistatic coatings (Col. 13, lines 61-68 and Col. 14, lines 1-13), thereby obtaining the invention as set forth in the presently cited claims.

5. Claims 12 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jonas in view of Han as applied to claims 3, 6-11, 14-17, 19, 22-25, 27, and 28, and further in view of Niu (U.S. Patent Number 6,205,016).

The difference between Jonas in view of Han is the requirement of additional components such as carbon nanoparticles.

Niu, which is drawn to fibril composite electrodes (Col. 1, lines 7-9) including conducting polymers such as polypyrrole and polythiophene (Col. 9, lines 5-7), discloses the addition of electrochemically active materials such as carbon nanofibers, carbon nanoparticles, conducting polymers, metals, metal oxides, metal nitrides, or metal carbides (Col. 8, lines 41-67). It is to be noted that the Markush group members recited in the presently cited claims that are not disclosed by Niu are obvious variants of one another because all Markush group members presently recited are electrochemically active materials that are intrinsically encompassed by Niu. It would have been obvious to one of ordinary skill in the art to use Niu's electrochemically active materials in the composition and method of Jonas in view of Han because the resulting device will exhibit the dual function of electrical capacitance and maintained structural integrity (Col. 6, lines 15-21), thereby obtaining the invention as set forth in the presently cited claims.

6. Claims 13 and 26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jonas in view of Han as applied to claims 3, 6-11, 14-17, 19, 22-25, 27, and 28, and further in view of Stroetmann et al. (U.S. Patent Number 5,554,179).

The difference between Jonas in view of Han is the requirement of perfluoroalkylenesulfonic acid.

Stroetmann, which is drawn to electronically conductive material (Col. 1, lines 8-13), discloses perfluoroalkylenesulfonic acid (Col. 2, lines 26-38). It would have been obvious to one of ordinary skill in the art to use Stroetmann's perfluoroalkylenesulfonic acid in the composition and method of Jonas in view of Han because perfluoroalkylenesulfonic acid is a cation exchanger keeps the surface of an electrode free of negatively charged macromolecules (Col. 2, lines 26-38) which is a desirable effect in order for efficient functioning of the electrode, thereby obtaining the invention as set forth in the presently cited claims.

7. Claims 18 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jonas in view of Han as applied to claims 3, 6-11, 14-17, 19, 22-25, 27, and 28, and further in view of Facci et al. (U.S. Patent Number 5,258,461).

The difference between Jonas in view of Han as applied to claims 3, 6-11, 14-17, 19, 22-25, 27, and 28 and the presently claimed invention is an organic solvent having a boiling point of at least 100° C including solvents such as N-methylpyrrolidone, ethylene glycol, dimethylacetamide, dimethyl formamide, dimethylsulfoxide, and combinations thereof.

Facci, which is drawn to polymeric films for use as belts in an electrophotographic imaging member (Col. 1, lines 6-11), discloses liquid dispersion media, or solvents, for dissolving polymer, wherein the solvents include N-

methylpyrrolidone, ethylene glycol, dimethylacetamide, dimethyl formamide, and dimethylsulfoxide (Col. 8, lines 18-56; Col. 9, lines 46-68; and Col. 10, lines 1-18), wherein the polymer is a suitable film forming thermoplastic polymer capable of forming a dispersion of electrically charged thermoplastic film forming particles in an organic liquid (Col. 7, lines 15-18). It is to be noted that as the solvents of Facci are the same as the presently claimed solvents, the boiling point of the solvents would intrinsically be at least 100° C. It would have been obvious to one of ordinary skill in the art to use the solvents of Facci in the dispersion of Jonas because the conductivity of the dispersion may be altered to a desired value (Col. 9, lines 40-45), thereby obtaining the invention as set forth in the presently cited claims.

Response to Arguments

8. Applicant's arguments filed October 18, 2005 have been fully considered but they are not persuasive. Specifically, applicant argues that (i) Jonas does not disclose a colloid forming aqueous liquid medium, dispersing partially dried solids in an organic liquid, and a polyacid that is a colloid-forming fluorinated sulfonic acid, (ii) Han does not disclose the independent claims 14 and 24, and (iii) while Facci discloses high boiling solvents, no other elements of applicant's claims are taught or suggested in Facci.

With respect to the argument in (i), as Jonas discloses all the claimed components of independent claims 14 and 24 including a polyacid (see Col. 3, lines 19-25), it would be intrinsic to the resulting composition to form a colloid. Further, Jonas discloses dissolving the disclosed components in the organic solvent (Col. 3, lines 19-

25), which intrinsically includes dispersing the solids within the organic solvent. Moreover, Jonas does not disclose the perfluoroalkylenesulfonic acid specifically claimed, but Jonas does disclose polyacids (Col. 3, lines 19-25) and generally sulfonic acids (Col. 4, lines 3-12), which encompasses the present independent claims. This is the reason why a secondary reference Stroetmann has been brought in to specifically teach perfluoroalkylenesulfonic acid and its use.

With respect to the argument in (ii), note that while Han does not disclose all the features of the present claimed invention, Han is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely, adding polypyrroles to Jonas's method and composition because the electrically conductive polymer may be used to form electrically conductive articles such as antistatic coatings, and in combination with the primary reference, discloses the presently claimed invention. If the secondary reference contained all the features of the present claimed invention, it would be identical to the present claimed invention, and there would be no need for secondary references.

With respect to the difference in (iii), note that while Facci does not disclose all the features of the present claimed invention, Facci is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this

reference teaches a certain concept, namely, altering the conductivity of the dispersion to a desired value, and in combination with the primary reference, discloses the presently claimed invention. If the secondary reference contained all the features of the present claimed invention, it would be identical to the present claimed invention, and there would be no need for secondary references.

It is therefore the Examiner's position that the presently pending claims 3 and 6-28 are rejected as described in the prior art rejections above in conjunction with the response to the applicant's arguments.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shruti S. Costales whose telephone number is (571) 272-8389. The examiner can normally be reached on Monday - Friday, 6:30 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shruti S. Costales
December 21, 2005

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